

**PositiveID Corporation**

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Suite 201  
Delray Beach, FL 33445

**Phone:** 1-561-805-8000

**Status:** Public (OTC: PSID)

**Website:** [www.PSIDcorp.com](http://www.PSIDcorp.com)

**Key Contacts**

William J. Caragol: Chairman/CEO

Lyle L. Probst: President

Kimothy Smith: Chief Tech Advisor

Allison Tomek: Sr. VP, Corp Dev

**Market / Industry Snapshot**

**Industry:** Molecular Diagnostics, Bio-threat Detection, Specialty Vehicles

**Sectors:** Defense/Healthcare

**Market Size:** \$30+ billion

**Company Financials**

**Financial Snapshot**

2016 Rev:	\$5.6M
2015 Rev:	\$2.9M

**Balance Sheet (at 12/31/2016)**

Current Assets:	\$1.1M
Current Liabilities:	\$11.4M
Stockholders' Equity:	(\$8.9M)

**BUSINESS DESCRIPTION**

PositiveID Corporation™ (“PositiveID”, “PSID” or the “Company”), is a life sciences company focused on detection and diagnostics. PositiveID specializes in the development of microfluidic systems for the automated preparation of and performance of biological assays in order to perform molecular diagnostics to detect biological threats in a healthcare setting or at the point of need. PositiveID is also a leader in the specialty vehicle market and infrared thermometry market. The Company is developing Firefly Dx, a point-of-need, handheld, pathogen detection system designed to deliver molecular diagnostic results using real-time PCR (polymerase chain reaction) chemistry. The Company’s wholly owned subsidiary, E-N-G Mobile Systems, Inc. (“ENG”), is a specialty vehicle manufacturer specializing in mobile labs, communications vehicles, command centers and homeland security vehicles. PositiveID’s Caregiver® is an FDA-cleared, clinical-grade infrared thermometer for measurement of forehead temperature in adults, children and infants without contact. PSID has offices in Delray Beach, FL, Concord, CA, and Pleasanton, CA. PositiveID operates in three segments: Molecular Diagnostics, Mobile Labs and Medical Devices.

**COMPANY HIGHLIGHTS**

➤ **Innovative and Disruptive Products with Leading Technology and Strong IP.** The Company is focused on commercializing products that address large and unmet market needs. Firefly Dx is designed to provide lab-quality results from a sample in less than 30 minutes, at the point of need, compared to two to four hours for a lab device, which would enable accurate diagnostics leading to more rapid and effective treatment than what is currently available with existing systems. The Company holds a portfolio of 22 key patents/patents pending primarily for the automation of biological detection using real-time analysis for the rapid, reliable and specific identification of pathogens, and relating to its non-contact thermometer. The fastest growing segment of PositiveID’s ENG business is its mobile labs. The addition of PositiveID’s point-of-need bio-detection capabilities to ENG’s state-of-the-art mobile labs is expected to provide a turnkey solution for customers to rapidly and accurately test samples in the field. In its Medical Device segment, the Company’s Caregiver® thermometer is positioned to capitalize on the growing trend in the global temperature monitoring market to provide rapid measurement without skin contact, in order to minimize the spread of disease.

➤ **Large Market Opportunities – Molecular Diagnostics, Food Safety, Bio-threat Detection, and Temperature Monitoring.** The Company is targeting large and growing

multi-billion dollar markets. As it relates to Firefly Dx, the global molecular diagnostics market is projected to reach \$45 billion by 2020. The global food safety market is projected to reach \$19.7 billion by 2018, and the global hospital-acquired disease testing market is expected to reach \$7.5 billion by 2019. The global point of care diagnostics market is expected to grow from \$19.3 billion in 2016 to \$28.3 billion in 2021. Regarding the prospects for Caregiver, the global body temperature monitoring market is projected to reach \$1 billion by 2020, with infrared/non-contact thermometry experiencing the fastest growth.

➤ **Strategic Partners and Customers Enhance Market Visibility and Positioning.** The Company has entered into agreements with government and commercial partners and customers including The Boeing Company, United Technologies Aerospace Systems, Exxon, 3M, Sandia National Laboratories, Lawrence Livermore National Labs, AT&T, NBC, McKesson, Henry Schein, Department of Defense (“DoD”), Department of Homeland Security (“DHS”), NASA, ENSCO, among others.

PRODUCTS



M-BAND demonstration in London, UK



Firefly Dx (under development)



Interior of mobile laboratory



All-Threats Testing Laboratory Trailer for Department of Homeland Security



Caregiver Non-Contact Thermometer

## EXECUTIVE SUMMARY

PositiveID Corporation™ (“PositiveID”, “PSID” or the “Company”), is a life sciences company that develops biological detection and molecular diagnostic systems for America’s homeland defense and global healthcare needs. The Company operates in three segments: Molecular Diagnostics, Mobile Labs and Medical Devices. The Company’s Molecular Diagnostics segment specializes in the development of microfluidic systems for the automated preparation of and performance of biological assays to perform molecular diagnostics to detect biological threats in a healthcare setting or in the field / at the point of need. The Company’s Mobile Lab segment is a leader in the specialty vehicle market. PositiveID holds a portfolio of 22 key patents/patents pending primarily for the automation of biological detection using real-time analysis for the rapid, reliable and specific identification of pathogens, and, in its Medical Device segment, for its Caregiver thermometer. The Company has offices in Delray Beach, FL, a manufacturing facility in Concord, CA, and labs in Pleasanton, CA.

PositiveID gained recognition in the bio-threat detection industry from the development of its automated airborne pathogen detection system, M-BAND (Microfluidic Bio-agent Autonomous Networked Detector), developed under contract with the U.S. Department of Homeland Security (“DHS”) Science & Technology directorate and more than \$30 million of contract funding. M-BAND continuously and autonomously analyzes air samples to detect pathogenic bacteria, viruses and toxins for up to 30 days in one service interval. Results from individual M-BAND instruments are reported via a secure wireless, cellular, or wired network in real time to give an accurate and up-to-date status of field conditions. M-BAND performs high specificity detection for six organisms and three toxins on the Centers for Disease Control’s category A and B select agents list. The system has reserve capacity to allow expansion for the detection of up to 20 organisms.

Building upon what it learned in the development of M-BAND, PositiveID is working toward completing the development and testing of Firefly Dx, a point-of-need, handheld system designed to deliver molecular diagnostic, lab quality and lab quantity results using real-time PCR chemistry. The system is a two-part device consisting of a portable handheld instrument with wireless communication and disposable single-use cartridges containing all necessary analytical elements. Results are provided from a sample at the point of need in less than 30 minutes, which would enable accurate diagnostics leading to more rapid and effective treatment than what is currently available with existing systems. This new generation of molecular diagnostics can be used to identify microorganisms, cancer cells, bacteria and viruses by searching for their specific nucleic acid sequences or bio-markers – or to characterize previously unknown DNA sequences related to human diseases.

Firefly Dx is being developed to meet the growing need for rapid biological detection in the healthcare and molecular diagnostics markets by enabling hospitals, physicians and other providers to save lives and fight disease. Secondary markets for Firefly Dx are expected to be in agricultural screening in both domestic sectors and developing countries, point of need monitoring of pathogenic outbreaks, and for the detection of biological agents associated with weapons of mass destruction.

Comprising its Mobile Labs segment, PositiveID’s wholly owned subsidiary, E-N-G Mobile Systems, Inc. (“ENG”), acquired in December 2015, is a leader in the specialty vehicle market, with a focus on mobile laboratories, mobile cellular systems, and homeland security applications. ENG has built more mobile laboratories specifically designed for chemical and biological detection, monitoring and analysis than any other specialty vehicle manufacturer. The combination of PositiveID’s expert bio-detection technologies with ENG’s advanced mobile labs offers customers a next generation, best of breed solution in the mobile laboratory space. ENG also provides specialty vehicle manufacturing for TV news vans and trucks, emergency response trailers, mobile command centers, infrared inspection, and other special purpose vehicles. During the past 25 years, ENG has pioneered numerous engineering and design breakthroughs. ENG’s MobiLab™ Systems have become the primary choice of mobile labs for scientific and environmental agencies and organizations throughout the country because of their productivity in the field. ENG’s mobile cellular systems offer temporary cell sites to boost capacity, as well as the latest technology for testing site performance. Over the last decade, ENG has consistently averaged annual revenues of \$4 million per year.

PSID’s Medical Device segment is comprised of its wholly owned subsidiary, Thermomedics Inc., which markets the FDA-cleared, Caregiver® non-contact, infrared thermometer. Caregiver, which was developed by the inventors of tympanic thermometry, measures forehead temperature in adults, children and infants, without

contact. Because it does not touch the patient, Caregiver therefore reduces contamination risk and saves medical facilities the cost of probe covers (\$0.05 to \$0.10 per temperature reading), storage space and disposal costs. The acquisition, completed in December 2015, brings complementary manufacturing and FDA expertise, a strong management team, and revenue with strong gross margins. Furthermore, the established distribution channel and customers overlap with the expected customer base for Firefly Dx.

## GLOBAL MARKET OPPORTUNITIES

### Real-Time Molecular Diagnostics

With growing incidences of infectious diseases and hospital-acquired infections, expansive foreign troop deployment, increasing domestic populations, and the need for a stable supportive agricultural infrastructure, the availability of effective molecular screening technologies is of growing importance. Whether natural or man-made, an invasive disease outbreak without proper monitoring or detection, and thus resulting in reduced countermeasure effectiveness, can significantly affect the health and commercial stability of livestock or human populations on a large scale. To this end, many biological and chemical based methodologies exist to detect a wide range of potential pathogenic threats. Unfortunately, currently available technologies are still costly, labor intensive, and often limited to laboratory/clinical settings, thus falling short of truly effective point-of-need or timely site-specific monitoring.

### Point-of-Need Molecular Diagnostics Testing

BCC Research estimates the global molecular diagnostics market was valued at almost \$21.7 billion in 2014. The total market is projected to grow at a compound annual growth rate (CAGR) of 12.5% to reach nearly \$45.2 billion by 2020. The global point of care diagnostics market is expected to grow from \$19.3 billion in 2016 to \$28.3 billion in 2021. In addition, there are numerous food safety and agricultural needs for a point-of-need PCR technology. According to Global Industry Analysts Report, Food Safety Testing – A Global Strategic Business Report, The Global market for food safety testing projected to reach \$19.7 billion by 2018. In addition, the global in vitro diagnostic market (of which the global PCR market is a subset) was valued at \$49.2 billion in 2012, and is expected to reach \$69.1 billion by 2017, at a CAGR of 7% from 2012 to 2017, according to Research and Markets' report titled "In Vitro Diagnostic (IVD) Market, Technique & Applications – Forecast to 2017."

### Firefly Dx Applications and Markets

#### Human Infectious Diseases

- Seasonal and pandemic influenza panels
- *Clostridium difficile* test panel and diarrheal differential diagnostic panels
- "Bed-side" diagnostic capability for respiratory differential diagnostic panels
- Antibiotic resistance detection panels (such as MRSA)
- Emerging and re-emerging concerns such as Ebola, Dengue Fever Virus, Chikungunya, Nipah, Zika Virus, etc. in resource constrained environments



#### Human Clinical (non-infectious disease)

- Radiation exposure biodosimetry panel post-Rad/Nuc incident and for manned space missions (such as the International Space Station)
- Cancer detection and diagnostics panels

#### First Responders

- Biothreat agent detection and confirmation (such as Anthrax) from environmental samples, powders
- Radiation/Nuclear incident true exposure determination of casualties

#### Agricultural

- True "Pen-side" diagnostic ability for high-priority and routine animal diseases (such as Porcine Reproductive and Respiratory Syndrome) for veterinarians and animal health technicians



- Rapid, accurate diagnostics on-site for Foreign Animal Disease outbreaks (e.g Foot and Mouth Disease Virus)
- Field diagnostic capability for high-consequence invasive crop diseases
- Testing for genetically modified organisms (GMOs) at the point of import/export

## **Bio-Detection Market**

The bio-detection market has seen a surge in funding over the past decade. This increased attention to bio-surveillance can be directly attributed to events that occurred towards the beginning of the 21st century. The Anthrax scare in 2001, the SARS outbreak in 2003, the ricin letters in 2004 and the H1N1 health crisis in 2009, the concern over Syrian and North Korean biological and chemical weapons, and most recently the Ebola outbreak in western Africa, have confirmed to the domestic and global community that threats of infectious disease and bioterrorism are real and substantial. The urgent requirement for public healthcare and homeland security agencies to institute an early detection system for bio-terrorist attacks and infectious disease outbreaks is a main driver of the increasing bio-detection market. According to Grand View Research, a U.S.-based market research company, the global bio-detectors and accessories market size is anticipated exceed \$6 billion by 2022, with point-of-care testing representing the largest portion of the bio-detection market.

## **Global Temperature Monitoring Device Market**

According to Global Industry Analysts, the global body temperature monitoring devices market is projected to reach \$1.0 billion by 2020, with the United States market being the largest. The global market drivers include the concern over the spread of highly infectious diseases like Ebola and the rise in demand for non-contact thermometers, and increasing adoption of infrared forehead and ear thermometers. Infrared thermometry is the fastest growing segment of the market with a CAGR of 5.9%.

## **PRODUCT AND TECHNOLOGY OVERVIEW**

### **MOLECULAR DIAGNOSTICS SEGMENT - FIREFLY DX**

The Firefly Dx system is an agnostic handheld system currently under development that is designed to operate with a series of cartridges for biological sample processing and detection, providing laboratory-grade biological analysis and wireless communication of results in less than 30 minutes at the point of need. Firefly Dx combines sample lysis, purification, real-time PCR analysis, and the identification for nucleic acids of interest. The system is expected to be capable of processing a variety of sample types, including whole blood, buccal and nasopharyngeal swabs, urine, and environmental field samples. The incorporated, multiplex PCR assay will be able to analyze for multiple, user-defined targets from a single sample.

Furthermore, by taking advantage of the TaqMan®-based PCR assay and real-time detection, the Firefly Dx system is expected to be able to measure altered gene expression levels such as those observed in endocrine diseases, radiation exposure, and cancer. Results can be immediately obtained and processed in situ via SMART phone interface (or personal computer) with a specialized, mobile application and cloud-based data sharing and storage.

The microfluidic cartridge approach includes patented technologies including Sonication, Microfluidic Valves and Sample Prep Apparatus: US Patent Nos. 7,541,166 B2; 7,553,647 B2; 7,607,641 B1; 7,785,869 B2; 8,133,451.

The Firefly Dx is designed to be a cost effective and simple to use screening tool suitable for multiple applications and to be deployed in a wide range of environments. The initial, primary use of this system is expected to be in clinical and molecular diagnostic settings, agricultural screening in domestic sectors and developing countries, point of need monitoring of pathogenic outbreaks, and for the detection of biological agents associated with weapons of mass destruction.

In the third quarter of 2016, the Company was awarded a Phase II contract under the SenseNet Program from the U.S. Department of the Interior on behalf of the U.S. Department of Homeland Security Science & Technology Directorate. The goal of the SenseNet Program is to implement faster, less expensive bio-threat

detection systems to increase the effectiveness of current systems and provide an added level of security. Under this Phase II award, PositiveID will provide its Firefly Dx system, designed to be a fully automated, lab quality, real-time device able to detect bio-threats at the point of need in minutes instead of hours.

Firefly Dx System and Cartridge:

Key advantages in the system are expected to be: Portability, low cost, pre-programmed disposable cartridges, ease of use, prevention of sample contamination, automated operation, reduction of human error, and complete processing from sample-in to results-out in under 30 minutes.

Product Specifications:

**Size:** The current design of the Firefly Dx platform system is 170 mm long x 115mm wide x 50mm thick.

**Weight:** The total operational weight of the Firefly Dx platform is estimated to weigh less than 2 lbs.

**Power Requirement:** The Firefly Dx platform will operate on lithium ion batteries or from an AC or DC power source.

**User Features / Product Requirements:**

- Run time: <30 minutes (depending on sample type and assay) after sample and cartridge are inserted into the instrument.
- Number of samples per cartridge: One
- Sample size: ~50-250 µl



Time-to-Result:

The current time-to-result for the Firefly Dx system is less than 30 minutes, depending on which assay panel / protocol is performed. We anticipate a further reduction in time-to-result in subsequent generations of the system. The Firefly Dx system is designed to be fully automated with preprogrammed radio frequency identification (RFID) chips embedded in each cartridge allowing for efficient, error-free protocol uploading and determination by the device platform.

Processing and Communication of Results:

The Firefly Dx stores all run data for 1000's of samples that can be transferred or uploaded as needed. The system will interface via Bluetooth communication with SMART phone or tablet, which can log results and location, and transmit data to operational centers. Analysis and data collection can also be performed locally on a mobile device with an HTML based, open source specialized mobile app that the user can program to meet individual needs.

Packaging/Kit:

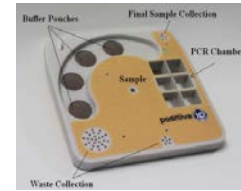
The Firefly Dx platform and battery charger complement will be packaged within a portable storage and transport case. The small dimensions and weight of the full system allows for simple modifications on commercially available transport cases with unique specifications to accommodate the needs of the user. The Firefly Dx cartridges will be packaged at the time of manufacture in sterile, sealed plastic bags that will be resistant to water and temperature fluctuations.

Cost Per Device/Test:

At full rate production scale, the acquisition cost for the Firefly Dx platform is estimated to be between \$1,000 and \$5,000 depending on quantity. At full-rate production the acquisition cost per test for the Firefly Dx system is estimated to be \$5 to \$25 depending on assay and the level of multiplexing.

Cartridge Benefits:

- 3D printed or injection molded
- All reagents are preloaded and ready to use
- RFID chip contains required protocol – no user programming
- Lyophilized reagents for sustained storage at room temperature
- All waste and sample is contained



Assay Format:

The assay format of the Firefly Dx platform is polymerase chain reaction (PCR) using Real-time TaqMan probe-based chemistry. The Firefly Dx system is adaptable to detect both DNA and RNA targets. PositivelD already has validated assays for multiple targets including several biothreat agents, Shiga toxin producing Escherichia coli, and Influenza A. Firefly Dx is suitable for a wide range of applications and for different clinical settings with wide ranging sample work flows. The Firefly Dx technology allows for a high degree of multiplexing, with the detection of multiple pathogens from a single test and multiple strains within a single pathogen.

PositivelD is currently developing diagnostic panels for the Firefly Dx against measles, respiratory diseases, and arbo-viral diseases. In addition to the diagnostic panels, PSID is developing a Firefly Dx cartridge to detect and measure radiation dosage and physiological effects in individuals exposed to a radiological accident or act of terrorism, or who are undergoing isotopic cancer therapy. The biodosimeter assay will detect changes in expression/mRNA levels for genes identified in radiation exposure response.

Because the Firefly Dx instrument is a universal cartridge-based system, it is designed to be able to accommodate new assays or panels very rapidly. Furthermore, because the Firefly Dx system uses standard TaqMan chemistry at industry standard reaction volumes, existing FDA approved assays developed by other entities could easily be ported onto the cartridge. Additional target pathogen selections will be made based upon future diagnostic panels and customer needs.

**MOBILE LABS SEGMENT - E-N-G MOBILE SYSTEMS**

ENG is the leader in mobile laboratory design and production, and has built more mobile labs designed for chemical and biological detection, monitoring and analysis than any other specialty vehicle manufacturer. Scientific and environmental agencies and organizations throughout the world prefer ENG's MobiLab™ Systems due to their productivity in the field. The proven MobiLab™ line is available in a wide range of platforms including vans, truck-based systems and trailers up to 53 ft. Applications range from general-purpose and chemistry labs, to BSL3-ready and full CBRNE threat detection and analysis. ENG has delivered over 400 MobiLab mobile laboratories worldwide since 1988 to federal, state and local agencies, private companies and foreign governments.

**Experience and Capabilities**

In addition to mobile labs, ENG has delivered more than 1,400 specialty vehicles to customers around the globe. These include communications/command centers, broadcast news vehicles, radio frequency monitoring, infrared monitoring and video communications vehicle systems, plus a wide range of mobile systems for emergency preparedness and threat response. ENG's products are known for their rugged design and human-factor engineering that pay off in everyday usage. ENG's wide experience assures that all systems are designed for optimal worker safety, durability, and ease of use. ENG's world-class scientists work in conjunction with the design engineers and shop personnel to deliver the most advanced mobile labs available.



Each model of ENG's comprehensive line of specialty vehicles, trucks, and trailer systems is custom-integrated with instruments of the customer's choice, and features a trouble-free electrical system, quality cabinetry and interior finishes, and all appliances. The impeccably constructed interiors are designed for safety, efficiency and ease of use.

ENG operates in a 12,000 sq.ft. headquarters facility in Concord, CA. This building includes a 2,000 sq. ft. modern office block, a large assembly area, cabinet shop, spray booth, metal shop with fabrication and welding facilities, and parts warehousing space. ENG also has a service and integration facility in West Grove, PA and an Approved Service Center in Chicago, IL.

ENG is an authorized distributor of Agilent, Hemco, Labconco, Steris, and other instrument and lab equipment manufacturers and many other components typically used in building mobile laboratories.

For the last decade, ENG has generated average annual revenues of \$4 million, and generated more than \$5 million of revenue in 2016.

## MEDICAL DEVICE SEGMENT - THERMOMEDICS

### Caregiver

Caregiver® is the world's first non-contact device with TouchFree™ technology developed by the team that invented tympanic thermometry. Caregiver is a clinical-grade, infrared thermometer for measurement of forehead temperature in adults, children and infants, without contact. It is designed for use in a wide variety of medical settings and can also deliver ambient/skin surface temperatures. It delivers an oral-equivalent temperature directly from the forehead in 1-2 seconds. Since there is no skin contact and Caregiver does not require probe cover supplies, it reduces the risk of cross-contamination, which is an increasing concern, and saves healthcare facilities the cost of covers (as much as \$0.05 to \$0.10 per temperature), storage space, and waste disposal costs. It is estimated that Caregiver can offer savings of \$250 or more per year per device in probe cover supplies alone.



Caregiver recorded an estimated 50 million temperatures in 2015, based on its installed base and industry estimates of the average number of beds and temperatures taken per bed in hospitals daily. The global market for temperature monitoring devices is forecast to reach \$1 billion by 2020, with infrared thermometers experiencing the fastest growth driven in part by concerns over the spread of highly infectious diseases like Ebola, according to Global Industry Analysts, Inc.

Caregiver offers many advantages over competing temperature monitoring devices:

- Documented for use in clinical environments
- Delivers an instant temperature reading
- Reduces operator technique-dependency
- Is completely portable
- Provides up to 15,000 readings from a set of AA batteries
- Is rugged enough for high-volume use in a wide variation of medical treatment and diagnostic settings
- Can be used without awakening sleeping patients
- Has no sharp probes and is completely safe to use in all medical environments

PositiveID expects to launch a Bluetooth® version of its FDA-cleared Caregiver® infrared, non-contact thermometer in the second quarter of 2017, to connect wirelessly to electronic health record (EHR) systems and other hospital equipment such as patient monitoring stations.

The device has been cleared by FDA, meets all ASTM specifications for clinical performance, and offers hospitals significant cost savings and reduced infection risk.



## KEY MANAGEMENT

**William J. Caragol:** With over 25 years of industry experience, Caragol has served as our Chief Executive Officer since August 26, 2011 and as our Chairman of the Board of Directors since December 6, 2011 and previously served as our President from May 2007 until August 26, 2011. Previously Mr. Caragol held board and executive level positions with numerous emerging technology companies, including Millivision Technologies, VeriChip Corporation, Condor Technology Solutions and he began his career with Deloitte & Touche LLP. He is a member of the American Institute of Certified Public Accountants and graduated from the Washington & Lee University with a bachelor of science in Administration and Accounting.

**Lyle L. Probst, MBA:** Probst has served as our President since April 2014 and previously served as our vice president of operations and product development from May 2011 until April 2014. He has more than 15 years of management experience with large bio-detection programs and products, and joined PositiveID in 2011 at the time that PositiveID acquired Microfluidic Systems. Mr. Probst joined Microfluidic Systems in February 2007 and served as the director of project management until February 2010, and then served as the senior director of project management until April 2011. At Microfluidic Systems, Mr. Probst managed a series of programs such as the Department of Homeland Security Science & Technology BAND (Bioagent Autonomous Networked Detector) program. Before joining Microfluidic Systems, Mr. Probst directed bio-detection programs at Lawrence Livermore National Laboratory (“LLNL”) as a biomedical scientist project manager from February 2000 until February 2007. While he was at LLNL, he was instrumental in the development and deployment of BioWatch Generation 1, and was principal investigator/developer of the high-throughput BioWatch mobile laboratory and a subject matter expert within the Biodefense Knowledge Center. Mr. Probst was previously the Director of Capillary Electrophoresis and Director of Chemistries at the Joint Genome Institute. He holds a B.S. in Biology and an M.B.A in Executive Management.

**Gary O’Hara:** O’Hara has more than 25 years’ experience in medical device product innovation and business development and is the Chief Technology Officer of Thermomedics. Mr. Gary O’Hara is a Founder of Intelligent Medical Systems, Inc. He invented the first commercialized infrared tympanic thermometer (FirstTemp® and Genius® brands) for which he was cited as Inventor of the Year by the San Diego Patent Law Association. Mr. O’Hara has also been active in the seed and startup phases of many ventures through his involvement with the Tech Coast Angels which is an organization of 150 investors that invest in and mentor early stage technology and biomedical companies. Mr. O’Hara holds numerous patents related to medical devices and electronic computer games and holds B.S. and M.S. degrees in Electrical Engineering from the University of Michigan as well as an MBA from Eastern Michigan University.

**Kent Murray:** Mr. Murray is a Financial and Operational Executive with over 20 years of leadership and hands-on experience as a finance business partner, and is Senior Vice President Finance PSID, and CFO / General Manager ENG Mobile Systems, Inc. He has worked with service, manufacturing, sales and marketing, and software businesses from \$10M to \$3 billion in sales, recently as a CFO. Overseeing financial planning and analysis, treasury and controllership functions he has integrated finance with operations driving growth and profitability. He directed international finance teams from Asia, Europe, and North America to South America, setting up subsidiaries and establishing worldwide operations and leading an acquisition. Previously Mr. Murray worked for Nexant, and several high-tech firms including Bell Microproducts, and 3Com Corporation. He received his CPA in California working with Price Waterhouse, a B.S in accounting from Brigham Young University, and has a MBA in Finance, from San Diego State University.

**Allison Tomek:** Ms. Tomek has 15 years of public company experience and has served as the Company’s Senior Vice President of Corporate Development since 2014. Prior to that Ms. Tomek was the Company’s Senior Vice President of investor relations. She joined PositiveID in January 2007 as Vice President, Investor Relations and Corporate Communications. She was previously Vice President of Investor Relations and Corporate Communications at Applied Digital Solutions, Inc. and Digital Angel Corporation, a majority-owned subsidiary. Before joining the Applied Digital family of companies, Ms. Tomek was Director of Investor Relations and Corporate Communications of Andrx Corporation, a pharmaceutical manufacturer and distributor. Ms. Tomek holds a B.S. in News/Editorial from the School of Journalism and Mass Communication at the University of Colorado in Boulder.

## BOARD OF DIRECTORS

**William J. Caragol:** Bio as previously described.

**Ambassador Ned L. Siegel:** Siegel has served as a member of our Board of Directors since February 2011. He has had a long and distinguished career as a senior U.S. government official and businessman. He was appointed by then President George W. Bush as the U.S. Ambassador to the Commonwealth of the Bahamas from October 2007 to January 2009. He was also appointed by President Bush to serve under Ambassador John R. Bolton at the United Nations in New York, serving as the Senior Advisor to the U.S. Mission and as the U.S. representative to the 61st Session of the United Nations General Assembly. Prior to his ambassadorship, he was appointed to the Board of Directors of the Overseas Private Investment Corporation (OPIC). In addition to his public service, Ambassador Siegel has over 30 years of entrepreneurial successes. Presently, he serves as President of The Siegel Group, a multi-disciplined international business management advisory firm specializing in infrastructure, real estate, ports, energy, technology, financial and cyber security services. He also serves on the Board of Directors and Advisory Boards of other numerous public and private companies, and private equity groups. He graduated Phi Beta Kappa from the University of Connecticut in 1973 and received a Juris Doctorate from the Dickinson School of Law in 1976. In December 2014, he received an honorary degree of Doctor of Business Administration from the University of South Carolina.

**Michael Krawitz:** Krawitz has served as a member of our Board of Directors since November 2008. He currently serves as Senior Vice President, General Counsel and Corporate Secretary of York Risk Services Group, Inc. and its affiliated entities. From January 2014 to June 2015, he served as Chief Legal and Financial Officer of VeriTeQ Corporation. From November 2010 to January 2014 he served as chief executive officer and general counsel of PEAR, LLC, a company that finances renewable energy and energy efficiency projects throughout the United States. From June 2010 until February 2011, he served as chief executive officer of Florida Sunshine Investments I, Inc. He previously served as the chief executive officer and president of Digital Angel Corporation from December 2006 to December 2007, executive vice president, general counsel and secretary from March 2003 until December 2006, and as a member of its Board of Directors from July 2007 until December 2007. Mr. Krawitz served as a member on the Board of Directors of Steel Vault from July 2008 until November 2009. Mr. Krawitz earned a bachelor of arts degree from Cornell University and a juris doctorate from Harvard Law School.

**Jeffrey S. Cobb:** Cobb has served as a member of our Board of Directors since March 2007. Since April 2004, Mr. Cobb is the chief operating officer of IT Resource Solutions.net, Inc. Mr. Cobb served as a member of the Board of Directors of Steel Vault from March 2004 through July 22, 2008. Mr. Cobb earned his bachelor of science in Marketing and Management from Jacksonville University.

## BOARD OF ADVISORS

**Kimothy Smith, DVM, Ph.D.:** Chief Technology Advisor, Dr. Kimothy Smith provides professional consulting services in the areas of biosurveillance, bioforensics, biodefense, biosecurity, molecular genetics and diagnostics, and food safety, defense and security. Previously, he was Senior Advisor for International Biodefense for DHS, Office of Health Affairs and was detailed to the U.S. State Department Office of International Health and Biodefense. He also served as the Acting Director of the National Biosurveillance Integration Center, where he was responsible for setting the vision and strategy of a U.S. government-wide effort to acquire, aggregate, integrate, analyze, interpret and disseminate all-source biosurveillance information from governmental and private sectors for epidemiological analyses and health protection. Prior to DHS, he was at Lawrence Livermore National Laboratory (LLNL), serving as the Deputy Division Leader for Operations in the Counter-terrorism and Incident Response Division of the Non-proliferation, Arms Control and International Security Directorate.

**Yuval Rabin:** Rabin is Managing Partner at Oris Investments and has deep business experience with governments, state and federal processes, and an extensive network and contacts around the globe. Rabin, son of the late Israeli Prime Minister Yitzhak Rabin, was previously a Managing Partner at the Washington, D.C.-based Rabin, Sheves, Lipkin-Shahak, and Birger ("RSLB"), and was one of the first non-Americans to lobby the U.S. administration on behalf of foreign countries. Prior to RSLB, Rabin held senior executive positions serving companies including AARP, The Principal Group, Visteon, Ericsson, Airbus Industries, Nokia and Samsung among others. Rabin has also led initiatives for manufacturing and service companies, utilities

and governments in the U.S., Israel, Europe and the Far East. Rabin is a veteran of the Israel Defense Forces, having achieved the rank of major during his eight years of service.

**Michael Campbell:** Campbell is currently President and CEO of The Crescent Group, a company he founded, which is a business development consulting firm specializing in government and political relations. He is also the CEO and founder of South Stone, LLC, a distributor of tooling and supplies for the stone fabrication industry. Prior to founding South Stone, Campbell was an investor in and served as Chief Development Officer for Triton Stone Carolinas, which distributed stone and tooling to the stone industry. In 2006, Mr. Campbell won the three-way Republican primary for Lt. Governor of South Carolina on June 13, 2006. Campbell has vast experience and knowledge in the political arena with service in various roles of multiple campaigns, including those of his late father, Republican icon and former U.S. Congressman and Governor, Carroll A. Campbell, Jr.

**R. Paul Schaudies, Ph.D.:** Dr. Schaudies is the CEO and co-founder of GenArraytion, and an internationally recognized expert in biodefense, biotechnology and nanotechnology. He has served on over a dozen National Research Council committees as well as advisory committees for many US Government agencies. Dr. Schaudies was the science advisor to the EPA On-Scene Coordinator, and Incident Commander of the 2001 anthrax incident in Washington, DC. As a US Army Officer, he supported the United Nations as an UNSCOM inspector in Iraq. Dr. Schaudies has over 30 years of experience as a corporate executive. He was an AVP and Division Manager for Biological and Chemical Defense at Science Applications International Corporation for 9 years. He spent 13 years as an active duty US Army officer and retired as a Lieutenant Colonel in the USAR. Dr. Schaudies was the Program Manager for Biological and Chemical Defense Research in the Central MASINT Office at the Defense Intelligence Agency, and a Senior Researcher at the Walter Reed Army Institute of Research with over 25 peer reviewed scientific publications.

**Benedikt von Braunmuehl:** von Braunmuehl is Chairman of the Board of Directors of PathoQuest, a next-generation molecular diagnostics company with a unique approach in infectious disease diagnostics. He has held several senior healthcare consulting and advisory roles, supporting companies' geographical expansion, business development, M&A, and partnerships. Von Braunmuehl was previously the Sr. VP and Head of Global Commercial Operations of QIAGEN, a leading European biotech company active in molecular diagnostics and life science markets.



## SELECTED FINANCIAL DATA

### CONDENSED INCOME STATEMENT AND BALANCE SHEET

(\$ in thousands)	Year Ended	
	12/31/2016	12/31/2015
Revenue	\$5,559	\$2,940
Operating loss	\$ (7,147)	\$ (4,426)
Net loss	\$ (13,061)	\$ (11,404)
	12/31/16	12/31/15
Cash	\$ 40	\$ 173
Total Assets	\$ 2,562	\$ 4,695
Total Current Liabilities	\$ 11,407	\$ 13,642
Stockholders' Deficit	\$ (8,863)	\$ (11,842)

## CAPITALIZATION

### PositiveID Corporation Capital Structure

(Shares and \$ in thousands)

	Current <sup>(1)</sup>	Ownership %	
		Basic	Diluted
<b>Equity</b>			
Common Shares	7,142,969	100.0%	28.7%
Series II Preferred - Board and Mgmt	17,700,477		71.2%
Options and Warrants	6,292		0.0%
Diluted Shares	<u>24,849,738</u>		<u>100.0%</u>
<b>Convertible Debt</b>	<u>\$ 5,430</u> <sup>(2)</sup>		

(1) Share counts as of April 5, 2017

(2) Convertible notes with embedded derivatives as of December 31, 2016



## COMPARABLES/COMPETITION

### IQuum

IQuum, a privately held biotechnology company that focuses on developing point-of-care offerings for the molecular diagnostics market, was sold in April 2014, to Roche for \$275 million up front and up to \$175 million in milestone-based payments. IQuum developed the cobas Liat System, which includes an analyzer as well as initial assays for Influenza A/B and Strep A. The analyzer and the influenza tests were already FDA-cleared and CE-marked when Roche acquired IQuum. At the time of sale to Roche, IQuum was believed to be approximately one to two years ahead of PositiveID in product offering.

### BioFire Diagnostics

BioFire Diagnostics, a molecular biology company with products that can detect viral and bacterial infections in a single test, was sold in September 2013, to french biotech firm BioMerieux for \$450M. BioFire currently has four commercial instrument platforms related reagent kits, sample collection kits, and two FDA cleared test panels. The company's primary customer is the U.S. government and it currently has active contracts in place. At the time of sale to BioMerieux, BioFire was believed to be approximately two to three years ahead of PositiveID in product offering and maturity.

### Bio-Rad Laboratories

Bio-Rad Laboratories, Inc. (NYSE: BIO and BIOb), a multinational manufacturer and distributor of life science research and clinical diagnostics products, acquired QuantaLife, Inc. in October 2011, for \$162 million in cash plus potential future milestone payments. QuantaLife has a digital PCR system, the Droplet Digital PCR system (single instrument platform), that provides quantification of target molecules for the detection of rare mutations including distinguishing rare sequences in tumors, precise measurement of copy number variation, and absolute quantification of gene expression. The Droplet Digital PCR system had completed prototype testing at the time of acquisition by BioRad. PositiveID believes its Firefly Dx is approximately one to two years away from achieving the same maturity level as the QuantaLife instrument at the time of acquisition.

### GenturaDx

GenturaDx was sold in 2012 to Luminex for \$50M upfront plus \$68M contingent consideration. GenturaDx was a pre-revenue company in the process of developing an automated real-time, PCR, cartridge-based, bench-top instrument at the time of acquisition by Luminex. A small number of prototype systems had been manufactured and were undergoing internal testing and redesign. PositiveID believes that within 12 months the Firefly Dx will be at the same level of maturity as the GenturaDx system when acquired.

### Luminex Corporation

Luminex Corporation (NasdaqGS:LMNX), engages in the development, manufacture, and sale of proprietary biological testing technologies and products for the life sciences and diagnostic industries. It offers xMAP technology, an open architecture and multiplexing technology that allows simultaneous analysis of approximately 500 bioassays from a drop of fluid by reading biological tests on the surface of microscopic polystyrene beads called microspheres. The xMAP technology is used in various segments of the life sciences industry, such as the fields of drug discovery and development, clinical diagnostics, genetic analysis, bio-defense, food safety, and biomedical research. It operates in two segments, Technology and Strategic Partnerships; and Assays and Related Products.

### Cepheid

Cepheid (NasdaqGS:CPHD), a molecular diagnostics company, engages in developing, manufacturing, and marketing integrated systems for testing in the clinical market, as well as for application in legacy biothreat, industrial, and partner markets. Its systems enable molecular testing for organisms and genetic-based diseases by automation. The company offers GeneXpert system that integrates sample preparation in addition to DNA amplification and detection; and SmartCycler system, which integrates DNA amplification and detection to allow rapid analysis of a sample. The GeneXpert system is designed for reference laboratories, hospital central laboratories, and satellite testing locations, such as emergency departments and intensive care units within hospitals and doctors' offices. Cepheid also provides GeneXpert Infinity System for high volume testing.



The company offers tests for the GeneXpert and the SmartCycler systems in the areas of healthcare associated infections, critical infectious disease, genetics, women's health, and oncology.

## **SUMMARY**

PositiveID's product lines are developed from patented and patent-pending technologies addressing large government AND commercial markets with unmet needs. The Company is utilizing its strong partners/customers and distribution network, to grow within the various industries it serves. The Company's Firefly Dx is targeting the vast molecular diagnostics market, estimated to exceed \$45 billion by 2020. Firefly Dx is designed to provide lab-quality results from a sample in less than 30 minutes, at the point of need, compared to two to four hours for a lab device, which would enable accurate diagnostics leading to more rapid and effective treatment than what is currently available with existing systems. The Firefly Dx benchtop prototype system has successfully detected a number of pathogenic organisms including Zika, Ebola, E.coli, influenza, MRSA, MSSA, C. diff and others in less than 30 minutes. The Company's ENG subsidiary is capitalizing on its long history and track record of revenues, which have averaged \$4 million per year for the last decade. ENG is the worldwide leader in mobile labs, having delivered more than 400 of its MobiLab systems to high profile customers around the globe. The Company's best-of-breed, non-contact Caregiver thermometer is poised to capitalize on the growth of the infrared thermometry market, the fastest growing segment of the global temperature-monitoring device market which is estimated at \$1 billion by 2020, due to the concerns over the spread of highly infectious diseases.

## **FORWARD LOOKING STATEMENTS**

Information contained in this presentation may contain forward-looking statements, including, but not limited to: PositiveID's ability to complete development and commercialization of Firefly Dx, and PositiveID's ability to target the professional healthcare and specialty vehicle industries, grow its business, and attract new customers. These forward-looking statements are not statements of historical fact and represent only PositiveID Corporation's beliefs regarding future performance, which is inherently uncertain. There are a variety of factors, many of which are beyond the control of PositiveID Corporation, which affect operations, performance, business strategy, the Company's ability to raise capital, and results and could cause actual results and experience to differ materially from the expectations and objectives expressed in any forward-looking statements. Additional information about these and other factors that could affect PositiveID Corporation's business is set forth in PositiveID Corporation's various filings with the Securities and Exchange Commission, including those set forth in PositiveID Corporation's Form 10-K filed on March 31, 2017, and Forms 10-Q filed on November 18, 2016, August 12, 2016, and May 16, 2016, under the caption "Risk Factors." PositiveID undertakes no obligation to update or release any revisions to these forward-looking statements to reflect events or circumstances after the date of this statement or to reflect the occurrence of unanticipated events, except as required by law.